Claims

1. A process for the production of a molecular sieve adsorbent blend product with improved performance characteristics comprising

preparing a zeolite product;

preparing an attapulgite binder comprising highly dispersed attapulgite fibers;

mixing the zeolite with the attapulgite binder and water to produce a mixture;

forming a molecular sieve adsorbent product from the mixture; and

calcining the adsorbent product to form the molecular sieve adsorbent blend product,

wherein the tapped bulk density of the highly dispersed attapulgite fibers, as measured according DIN/ISO 787, is more than about 550 g/l.

2. The process of Claim 1 wherein the water adsorption capacity of the highly dispersed attapulgite fibers is greater than about 35 percent.

3. The process of Claim 1 wherein the attapulgite binder comprises from about 5 to about 30 percent, by weight, of the molecular sieve adsorbent blend product.

4. The process of Claim 1 wherein the attapulgite binder comprises from about 5 to about 20 percent by weight of the molecular sieve adsorbent blend product.

5. The process of Claim 1 further comprising blending a pore forming agent with the highly dispersed attapulgite binder and zeolite powder.

6. The process of Claim 5 wherein the pore forming agent comprises from about 2 to about 15 percent, by weight, of the molecular sieve adsorbent blend product.

7. A molecular sieve adsorbent blend product formed by the process of Claim 1.

8. A molecular sieve adsorbent blend product comprising a zeolite blended with a highly dispersed attapulgite binder, wherein the tapped bulk density of the highly dispersed attapulgite binder is more than about 550 g/l.

9. The product of Claim 8 wherein the water adsorption capacity of the highly dispersed attapulgite fibers is more than about 35 percent.

10. The product of Claim 8 wherein the highly dispersed attapulgite binder comprises from about 5 to about 30 percent by weight of the molecular sieve adsorbent blend product.

11. The product of Claim 8 wherein the highly dispersed attapulgite binder comprises from about 5 to about 20 percent by weight of the molecular sieve adsorbent blend product.

12. The product of Claim 8 further comprising a pore

forming agent.

13. A process for separation of components of a gaseous or a liquid feed stream comprising

passing the components of the gaseous or liquid feed stream over the molecular sieve adsorbent blend produced by the process of Claim 1.

14. A process for drying a gaseous feed stream comprising passing the feed stream over the molecular sieve adsorbent blend product of Claim 8.

15. A process for adsorption of carbon dioxide from an air stream comprising

passing the air stream over the molecular sieve adsorbent blend product produced by the process of Claim 1.

16. A process for removal of water from a gaseous or liquid ethanol stream comprising passing the gaseous or liquid ethanol stream over the molecular sieve adsorbent blend produced by the process of Claim 1.

17. A process for separation of nitrogen and oxygen from an air stream comprising passing the air stream over the molecular sieve adsorbent blend produced by the process of Claim 1.

18. A process for removal of sulfur and oxygen containing compounds from a hydrocarbon stream comprising passing the hydrocarbon stream over the molecular sieve adsorbent blend product by the process of Claim 1.

19. A process for removal of carbon monoxide, carbon dioxide and nitrogen from a hydrogen gas stream comprising passing the hydrogen gas stream over the molecular sieve adsorbent blend produced by the process of Claim 1.

20. A process for removal of water from a gaseous or liquid hydrocarbon stream comprising passing the gaseous or liquid hydrocarbon stream over the molecular sieve adsorbent blend produced by the process of Claim 1.

21. A process to separate n-paraffins from a mixture of iso-paraffins and n-paraffins comprising passing the mixture over the molecular sieve adsorbent blend produced by the process of Claim 1.

22. A process for removal of water from a gaseous or liquid stream of refrigerants comprising passing the gaseous or liquid stream over the molecular sieve adsorbent blend produced by the process of Claim 1.

23. A process for removal of water and carbon dioxide from air comprising passing the air over the molecular sieve adsorbent blend produced by the process of Claim 1.

24. A process for catalytic conversion of organic compounds comprising passing the organic compounds over the molecular sieve adsorbent blend produced by the process of Claim 1.